

Construction of a Collaborative Education Model between Universities and Enterprises for the Digital Media Art and Design Discipline in the Context of Digitalization

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Abstract: Under the digitalization strategy in education, a specialized collaborative education model between universities and enterprises has been constructed. By systematically analyzing the characteristics of the digital media art and design discipline, which closely integrates technology and art, fosters interdisciplinary collaboration, and emphasizes practical training and project-based learning, we have incorporated digital technologies and industry orientation. This has led to the establishment of a distinctive teaching approach that combines broad-based foundational education with cross-disciplinary teaching. The model structurally integrates the roles of schools, enterprises, students, and government entities. Specifically for the digital media art and design discipline, we have developed relevant competency goals, teaching models, and curriculum structures. These efforts provide valuable references for optimizing the curriculum system and achieving precise educational goals in this field.

Keywords: Digitalization; Collaborative Education Model; Digital Media Art Discipline Development; University-Enterprise Cooperation

1. Introduction

The world is undergoing profound transformations driven by the development of digital technologies, which are reshaping human life, learning, and thinking patterns, thus posing new demands on talent cultivation [1]. The Ministry of Education and 13 other departments, in their opinion issued in January 2023, regarding the mechanism for collaborative education among schools, families, and society, pointed out that schools should play a leading role in collaborative education. From April 1 to 2, 2023, during the Ninth Ministry of Education's University-Enterprise Cooperation and Collaborative Education Project Matching Conference held in Beijing, policies related to the transformation of higher education paradigms, educational digitalization strategies, and industry-education integration were interpreted. Wang Qiming proposed three expectations for industry-education integration in the new era: first, to focus on project integration and work on organized integration and quality improvement; second, to focus on model innovation and improve the models and mechanisms of industry-university cooperation; third, to focus on digital strategies and use digitalization to promote the application of results. Empowering higher education through digitalization is both a national policy and a future trend. Meanwhile, as modernization progresses, the development of the digital media art and design discipline highlights its significant advantages and necessity. With the advancement of technologies such as AI, talent cultivation in the field of digital media art and design is becoming increasingly important, reflecting new demands in the industry's talent requirements [2]. Based on this context, this study constructs a collaborative education model between universities and enterprises specifically for the digital media art and design discipline in the context of big data. The participants in this model include schools, enterprises, government, and students, aiming to explore new modes of university-enterprise collaboration to enhance the high-quality development of the digital media art and design discipline and optimize educational outcomes.

2. Review of relevant theories and literature review

2.1 Theoretical Background

The current paradigm of technological innovation is the collaborative education model. Guided by national intentions and driven by institutional arrangements, this model encourages cooperation among enterprises, universities, and research institutions, integrates resources, achieves mutual participation, and leverages complementary advantages to accelerate technology dissemination and industrial application. This collaboration fosters industrial technological innovation and the transformation of research outcomes [3]. Over time, the new concept of "collaborative innovation" has gradually gained popularity in management and education fields. In 2023, Chen Shi analyzed 4,254 pieces of literature, elucidating the significant research value of collaborative education innovation [4].

2.2 Digitalization and Education

Under the backdrop of digitalization, the application of information technology in the education sector has become increasingly profound. Digitalization broadly encompasses the internet, big data, artificial intelligence, blockchain, and other new-generation information technologies. The scope and degree of their application in education continue to expand and deepen, not only helping teachers enhance the quality of education through digital technologies but also promoting the rise of online education methods such as virtual classrooms. Dong Beihong, using the "technology-subject-context" analytical framework, summarized that the digitalization of education requires not only the promotion of resilient application of digital educational technologies from a technical dimension but also the enhancement of digital competence among diverse actors from a subjective dimension. More importantly, it calls for the return of subjectivity in digital education, emphasizing the critical role of students in the digital education process [5].

At the beginning of 2021, the European University Association introduced "Universities Without Walls: A Vision for 2030," identifying technological transformation as one of the primary drivers of university development [6]. In April 2022, the European Union discussed and adopted the "European Strategy for Universities," proposing that universities should play a key role in Europe's dual green and digital transformation to achieve the goal of "at least 80% of the population having basic digital skills by 2030" as outlined in the European Digital Decade [7]. Zhao Yang, based on the TOE theoretical framework, proposed that to achieve high-quality development of teacher education through digital empowerment, it is essential to build a digital resource system for teacher education, strengthen the construction of the digital education environment, and establish a digital evidence-based teacher education quality evaluation system [8]. Yang Yupeng, in his research on the policy issues and construction directions of the digital transformation of education in the new era, suggested the need to enhance policy supply capabilities in aspects such as systematic improvement, personalized needs, and ethical norms [9].

2.3 Collaborative Education Models

There have been numerous successful practical cases verifying the feasibility of school-enterprise collaborative education. The "Jinggao School-Enterprise Co-Education Platform" established by Ju Xin provides practical references for students to step out of the classroom and integrate internal and external education [10]. The Southern University of Science and Technology has explored a future-oriented innovative industry-academia-research collaborative education model through the "curriculum-training-competition" integration approach [11]. To promote the improvement of vocational teachers' "dual-qualification" qualities, Li Zhaomin and others constructed a comprehensive school-enterprise platform based on four dimensions: talent entry, capability enhancement, industry-academia-research integration, and evaluation incentives [12]. Hongfei Guo, through differential game research, summarized that universities and manufacturing enterprises can gain more benefits from cooperative games [13]. Daowang Li, based on big data and IoT theories, designed and implemented a general service platform for school-enterprise cooperative practical teaching aimed at IoT applications, relying on an industrial collaborative innovation platform [14]. In 2023, Professor Xu Xiaofei, head of the Ministry of Education's expert group for university-enterprise cooperative education projects, summarized in his keynote report "Connotation Upgrade, Structure Upgrade, Quality Upgrade: Welcoming the Tenth Year of University-Enterprise Cooperative Education Projects with a New Attitude" that since the implementation of the project in 2014, more than 1,700 enterprises have participated, with a total of

99,000 projects initiated and an accumulated investment of 3.561 billion yuan from enterprises. He pointed out the direction for strengthening outcome-oriented efforts and promoting the digitalization of education.

In summary, the digital transformation of education under the backdrop of digitalization is a development trend, and certain achievements have been made in the field of school-enterprise collaborative education. However, the current stage of educational digitalization remains in its early phases, with research outcomes predominantly focusing on theoretical studies and teaching reforms in the broader educational context. There is a lack of discipline-specific practical research, and the studies on school-enterprise collaborative education often concentrate on students' practical abilities and resource development, lacking integration between theoretical and practical teaching. Moreover, the combination of enterprise innovation and research projects is limited, and there is insufficient research on collaborative teaching between schools and enterprises. The digital transformation of education is a crucial approach to advancing China's educational development. Therefore, it is necessary to construct a discipline-specific school-enterprise collaborative education model from the perspective of digitalization to provide valuable references for the high-quality development of the digital media art and design discipline.

3. Characteristics of Digital Media Art Design Major

The digital media art design major is a forward-looking major in the evolution of digital education and is a key driving force in the art design field. The Digital Media Art Design major is based on the integration of new media and covers multi-disciplinary fields such as design, computer science, communication and business. It has comprehensive and comprehensive disciplinary characteristics. Its teaching and research core focuses on the symbiotic relationship between media and ideas, digital media and industry. . It actively responds to the national innovation development strategy, plays the driving role of universities, is active at the forefront of design education, and builds an interactive and integrated innovation education hub involving art and design, media and ideas, innovation and industry. The map of art and science is shown in Figure 1. Art and technology have more integration and innovation directions in the context of digitalization. The Digital Media Art Design major is a comprehensive discipline spanning natural sciences, social sciences and humanities, focusing on the concept of "science, art and humanities". This field is currently an interdisciplinary field, involving art design, interaction design, digital image processing technology, three-dimensional scene production, video editing and other knowledge. Accurately analyze the characteristics of the major, so that a targeted school-enterprise collaborative education model can be constructed. The characteristics of the digital art design major are as follows:

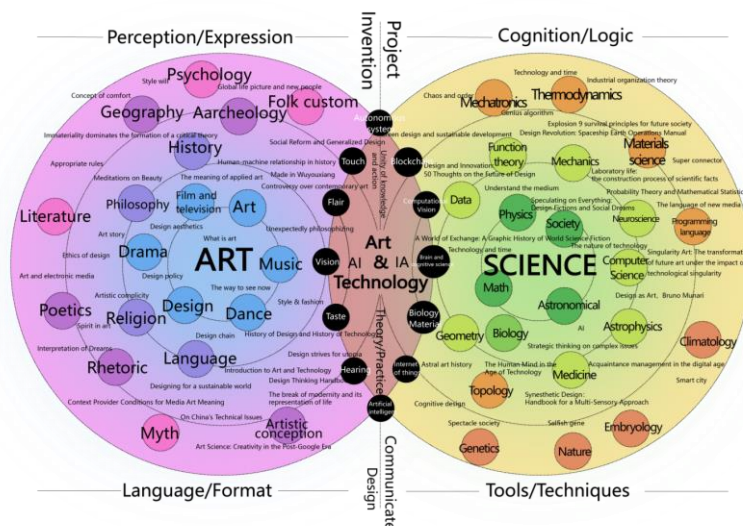


Figure 1: Art and Science Atlas

First, information technology and art are closely integrated. The Digital Media Art Design major is derived from the Computer Art major and aims to combine digital technology with art design to cultivate students' ability to adapt to the development needs of the digital age and information society. At the same time, the major trains students to skillfully use digital technology, interactive hardware equipment and

digital design software to meet the development trend of integrating technology and art. Second, cross-integration of multiple disciplines. This major is based on digital technology, organically combines art design with emerging digital media technology, and presents the characteristics of multi-disciplinary integration. Third, multi-dimensional teaching of practical training and projects. The digital media art major focuses on practical operations and needs to provide on-campus practical training conditions and participate in course assessments through projects, competitions, etc. to ensure that students gain sufficient practical experience in the field of digital media design.

In summary, it can be concluded that on the road of joint innovation and education between schools and enterprises, the following improvement directions are needed: talent attributes shift to personalization, standardization turns to diversification, and the training direction shifts to paying equal attention to whole-person education and technical research training.

4. Construction of a digital-based school-enterprise collaborative education model

In the context of digitalization, the establishment of school-enterprise collaboration in the digital art design major requires the structured integration of schools, enterprises, and students. It also requires the collaboration of government policies and a systematic analysis of students' professional characteristics, learning needs, and learning status. And learning trajectories. Although there are now many types of online education and teaching data platforms and various data are becoming increasingly abundant, these can only be used as the basic data source for the school-enterprise collaborative education system. It is also necessary to further establish a data middle platform and establish a mutual assistance model for each platform. To assist school teaching and students' personal growth, and achieve educational goals, the collaborative education model is shown in Figure 2.

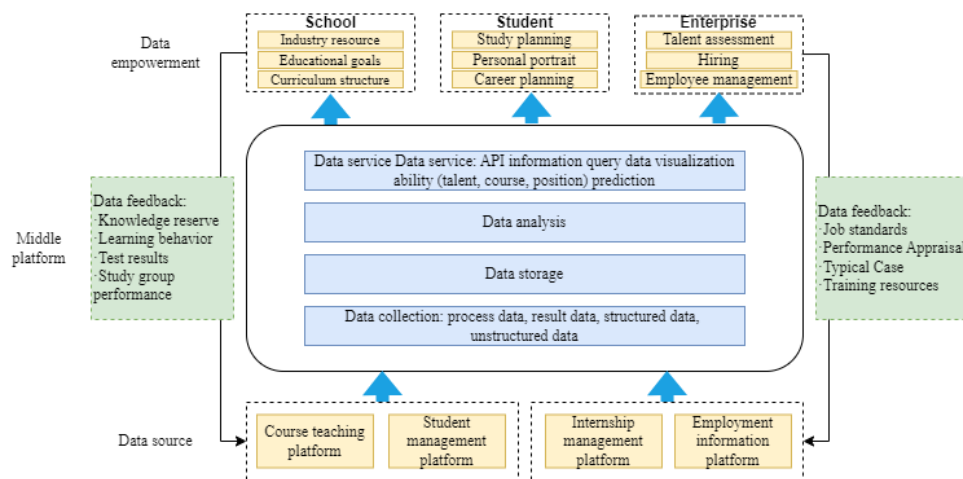


Figure 2: Art and Science Atlas

4.1 Capability goals

Facing the needs of the country and social progress, it emphasizes the starting point of sociological speculation, the core of humanistic studies of experience and perception, and the integration of art and science as the approach to teaching, cultivating the ability to think critically, cross-border integration, and envision the future. The talents cultivated by this major will have a thinking framework in the fields of science and art, science fiction entertainment, business communication, etc., be able to think deeply about the value, significance and problems of the future emerging digital media technology intervening in human life, and have a deep sense of social responsibility and speculative discussion. They will be able to promote the industrial development of future related industries such as "future human living conditions", "future human settlement environment", "future digital city", etc., and achieve deep integration of technology, media and art. The target cultivation ability is shown in Figure 3. Through interdisciplinary methods of art, humanities, science and new technologies, we should develop keen analysis and insight into complex problems, possess strategic thinking; integrate scientific and technological innovation, and develop new perceptions, new media, and new technologies. Patterns, design possibilities for new methods, developing sensory systems, and integrating across domains. Driven by practical projects, we study the design methods of new business and social service projects in

modern society, and cultivate talents with the ability to adapt to business and proactive entrepreneurship. When receiving the paper, we assume that the corresponding authors grant us the copyright to use the paper for the book or journal in question. When receiving the paper, we assume that the corresponding authors grant us the copyright to use.

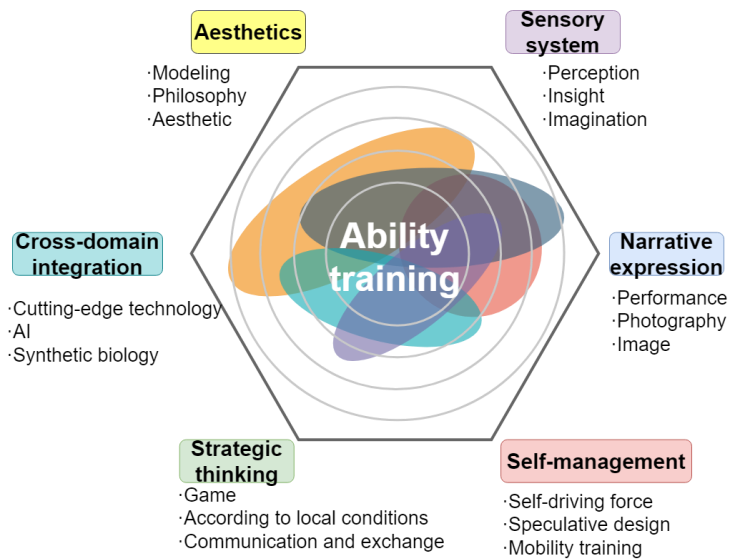


Figure 3: Digital media art design professional competency goals

4.2 Teaching model

Based on the characteristics of the digital media art major, it integrates art, design, technology, business, and society, expands the characteristic teaching of basic teaching and cross-border teaching, and establishes a teaching model as shown in Figure 4. Collaborative education through joint school-enterprise cooperation requires industry-oriented course design. Teaching plans should be closely integrated with the needs of the digital media art industry, and course content should be updated to adapt to market changes. Then carry out practical teaching, emphasize project-driven courses and internships, cultivate students' practical application ability and problem-solving ability, and encourage students' interdisciplinary cooperation. In the teaching practice projects, school-enterprise cooperation projects are appropriately integrated. Through school-enterprise joint projects, real enterprise projects are integrated into classroom teaching to achieve comprehensive employment education. At the same time, a mentor system for school-enterprise cooperation is established to enable students to receive guidance from corporate professionals and promote practical career planning. Finally, a comprehensive evaluation method is designed to promptly collect feedback from school-enterprise partners and optimize the teaching plan.

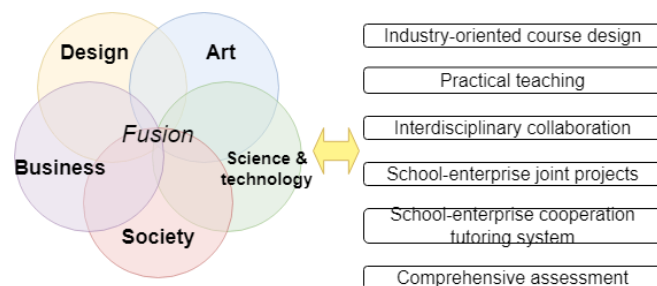


Figure 4: Teaching model for digital media art design major

4.3 Course structure

The School of Innovation and Design of the China Academy of Art has achieved great results in the construction of the digital media art design major, and has achieved good results in teaching and research reform, scientific research results, curriculum construction, etc. In the past three years, students in this major have won various high-level awards at home and abroad. It has participated in more than 300 specification competitions and exhibitions, and has won 40 national college student innovation and

entrepreneurship training program projects. Its course structure has certain practical reference value for the construction of digital media majors. Based on the practical results of the university, a preliminary curriculum design was carried out for the digital media art design major under the digital background. New generation information technologies such as the Internet, big data, artificial intelligence, blockchain, and artificial intelligence under digitalization were integrated into the curriculum design. With the development of new technologies, classroom adjustments should be made in a timely manner, and the course structure design is completed as shown in Figure 5. Digital meta-skill modules are integrated into the courses of different grades, and new teaching materials are designed, such as "Artificial Intelligence and Art", "Algorithmic Art" and so on. At the same time, according to the characteristics of art majors, "Inter-professional Project Courses" are added and integrated into school-enterprise joint projects for training.

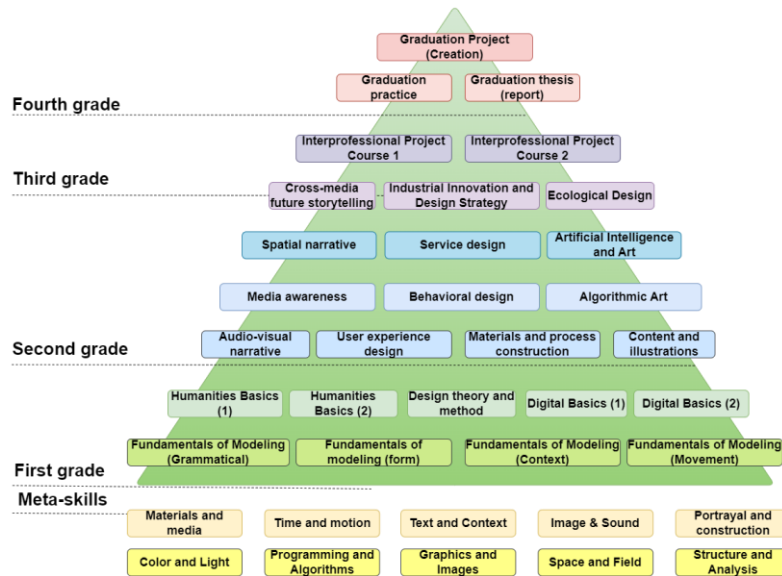


Figure 5: Course structure of digital media art major in the context of digitalization

5. Conclusion

This study explores the characteristics and development directions of the digital media art and design discipline within the context of digitalization. A collaborative education model between universities and enterprises was established, focusing on the competency goals, teaching models, and curriculum structures specific to this discipline. The research findings provide theoretical value and references for the future development and promotion of the digital media art and design discipline, offering scientific and effective suggestions for discipline construction. Additionally, it provides development directions for related research fields. However, this study has certain limitations. Future research will involve targeted practice of the collaborative education theoretical model, obtaining feedback data from multiple stakeholders, and continuously optimizing the collaborative education model for more comprehensive innovative development.

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